FOURIER TRANSFORM INFRARED EMISSION SPECTRA OF MgF_2

DANIEL J. FROHMAN, PETER F. BERNATH, *Department of Chemistry and Biochemistry, Old Dominion University, Norfolk, VA, USA*; JACEK KOPUT, *Department of Chemistry, Adam Mickiewicz University, Poznan, Poland*.

High resolution infrared emission spectra of hot MgF_2 in the 700 to 1300 cm^{-1} region have been recorded. The molecules were generated by heating solid MgF_2 to 1675 °C. Four vibrational bands were rotationally analyzed yielding band origins and rotational constants. Observed bands are: 001-000 (Σ_u^+ - Σ_g^+), 01^11 – 01^10 (Π_g – Π_u), 02^21 (f parity) – 02^20 (f parity) (Δ_u – Δ_g), and 03^31 – 03^30 (Φ_g – Φ_u). High level *ab initio* calculations were essential in making assignments and in helping to fit the data. The Δ_u – Δ_g band was only observed for f-parity because the e-parity is significantly perturbed by l-resonance.